Live and Dead Foraminiferal Faunas from Saint-Tropez Canyon (bay of Fréjus): Observations Based on in Situ and Incubated Cores

Titre	Live and Dead Foraminiferal Faunas from Saint-Tropez Canyon (bay of Fréjus): Observations Based on in Situ and Incubated Cores
Type de publication	Article de revue
Auteur	Fontanier, Christophe [1], Jorissen, Frans [2], Geslin, Emmanuelle [3], Zaragosi, Sébastien [4], Duchemin, Gérald [5], Laversin, Morgan [6], Gaultier, Melissa [7]
Editeur	Cushman Foundation for Foraminiferal Research
Type	Article scientifique dans une revue à comité de lecture
Année	2008
Langue	Anglais
Date	2008/01/04
Numéro	2
Pagination	137 - 156
Volume	38
Titre de la revue	The Journal of Foraminiferal Research
ISSN	0096-1191,

Résumé en anglais	The impact of sedimentary processes on the live (rose-Bengal-stained) foraminiferal faunas and on the composition of dead assemblages was investigated at a 373-m-deep station in Saint-Tropez Canyon (Bay of Fréjus, France). For the >150-µm fraction, biocoenoses and thanatocoenoses were investigated in two 10-cm-long cores collected with a classical Barnett multi-corer. In the 63- to 150-µm size fraction, living faunas were investigated in the first centimeter of the sediment. The first core was fixed with ethanol and rose-Bengal at the time of the sampling (the in situ core) whereas the second core was stored in a culture room during a 2.5-year-long incubation before its fauna was investigated.Both cores present similar thanatocoenoses (>150-µm size fraction) that are substantially contaminated by neritic foraminifera presumably transported from adjacent shelves. The sedimentological analysis of a third core reveals neither graded sediments nor erosional surfaces. Abundant organic remains are detected downcore in the muddy silt sediment. All these observations preclude the idea of deposition by a recent turbidite. Therefore, our canyon environment seems to behave at present as a depocenter for a rather continuous flux of fine sediment and resuspended organic matter originating from shallower areas. The living in situ faunas in the 63- to 150-µm and >150-µm size fractions are quite diverse with a moderate evenness. In the >150-µm size fraction, the high abundance of intermediate and deep infaunal taxa (Uvigerina elongatastriata, Bolivina alata, Melonis barleeanus, Globobulimina spp. and Chilostomella oolina) underlines the importance of organic matter focusing (and the related redox conditions) in this submarine canyon environment. The dominance of M. barleeanus and bolivinids in the 63- to 150-µm size fraction confirms the eutrophic aspect of our study area. Because of logistical problems, the incubated core suffered important salinity changes throughout the 2.5 years of incubation. Salinity ranged between 35 and 62 psu. Oxygen concentration was almost zero at the sediment-water interface at the end of incubation. In the larger size fraction (>150 µm), only one taxon, Rosalina bradyi (Cushman, 1915), survived these adverse experimental conditions. Its density (516 ind/100 cm2) is two orders of magnitude higher than that of the in situ core (3 ind/100 cm2). No living foraminifera were found in the first centimeter of the 63- to 150-µm size fraction. Rosalina bradyi was obviously the last species able to reproduce and grow in the incubated core. Our results show that this taxon is capable of tolerating extreme salinity changes.
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DOI	10.2113/gsjfr.38.2.137 [9]
Lien vers le document	http://dx.doi.org/10.2113/gsjfr.38.2.137 [9]

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